

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/EP2004/051824

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US 2003/099243 A1 (KANG MINHO ET AL) 29 May 2003 (2003-05-29)

D2: VOKKARANE V M ET AL: "Threshold-Based Burst Assembly Policies for QoS Support in Optical Burst-Switched Networks" PROCEEDINGS OF THE SPIE, SPIE, BELLINGHAM VA, US, vol. 4874, 2002, pages 1-11, XP002269170 ISSN: 0277-786X

1 Independent claim 1

- 1.1 The present application concerns a method of aggregation of bursts in Optical Burst-Switched networks or optical networks, in which packets are aggregated to form bursts. The method determines the average number of packets per burst for a given maximum allowable delay of the packets and an average packet rate, said average number of packets per burst being a value defined between an upper and a lower limit, according to **claim 1**.
- 1.2 The **closest prior art** is patent application US 2003/099243 A1 (**document D1**), which discloses a method for transmission of data packets through a network where said packet with a maximum allowable delay, and an average packet size are aggregated in a node of the network to a burst and the burst is transmitted with an average number of packets into the network and passes at least a switch, where the average number of packets per burst between an upper limit and a lower limit.
- 1.3 The **difference** of claim 1 over the prior art is that the upper and lower limits are

determined taking into consideration several other different transmission and switch parameters, such as switching time, the Erlang formula of traffic for the burst blocking probability and the number of channels, the average packet size.

- 1.4 The **technical effect** of this difference is that an optimum number of packets per burst is determined.
- 1.5 The **objective problem** to be solved by the present invention may therefore be regarded as: how to aggregate an optimal number of packets into a burst by reducing the blocking probability in the optical switch and to maximize the data throughput.
- 1.6 None of the available prior art documents teaches, hints or suggests a solution to this problem.

Document D1 discloses only a method in which packets are aggregated into bursts by adaptively changing the burst size according to the network load. The document D1 does not disclose or suggest how to resolve the problems affecting the determination of the optimum number of packets for a given maximum allowable delay and an average packet rate as to lead to low blocking probability of the switch and achievable data throughput.

Document D2 (XP002269170 cited in the ISR) discloses a threshold-based burst aggregation technique in conjunction with a burst segmentation policy to provide QoS in optical burst-switched networks. The document investigates various burst aggregation strategies which differentiate bursts by assigning different burst priorities to bursts that contain packets with different QoS requirements. Document D2 relate to general state of the art of burst aggregation and does not discloses or render (in combination) obvious the method of claim 1.

Thus, the subject-matter of claim 1 is not derivable from any one of the documents nor the combination without exercise of inventive step. Therefore, claim 1 meets the requirements of Article 33(2) and (3) PCT.

2 Independent claim 2

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Independent **claim 2** relates to the same subject-matter as claim 1 and also meet the requirements of Article 33(2) and (3) PCT.

3 Dependent claims

As **claims 3-15** are dependent on claim 1, claims 3-15 also meet the requirements of Article 33(2) and (3) PCT.

4 The present invention is **susceptible of industrial application**, Article 33(4) PCT.

Re Item VIII

Certain observations in the international application

5 The application does not meet the requirements of **Article 6 PCT**, because **claim 1 is not clear and concise**.

5.1 Claim 1 is drafted as a method claim.

However, the features in the method **claim 1 relate to apparatus technical features** (e.g. **node of the network, switch, network**) rather than clearly defining the steps of a method. The intended limitations are therefore not clear from this claim, contrary to the requirement of **Article 6 PCT**.

5.2 Claim 1 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The following functional statements do not enable the skilled person to determine which technical features are necessary to perform the stated functions:

"... the burst is transmitted with an average number of packets and a **link speed (ls)**":

it is not clear if **link speed (ls)** is a parameter characterising **the burst** or if link speed is a parameter characterising **another** feature.

- 5.3 From the definition of the subject-matter of claim 1 is not clear which features can be considered as part of the preamble and which is the characterizing portion of the claimed subject-matter, thereby rendering the definition of the subject-matter of claim 1 unclear (**Article 6 PCT, Rule 6.3(b) PCT**).
- 5.4 In claim 1 the applicant has made a reference that does **not have an antecedent base in the claim**, by using the term "said average number of packets per burst (ppb)", thereby rendering the definition of the subject-matter of claim 1 unclear, Article 6 PCT.

Hence, **claim 1 as a whole is not clear** as required by **Article 6 PCT**.

- 5.5 Although **claims 1 and 2** have been drafted as separate independent claims, they appear to **relate effectively to the same subject-matter** and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and/or in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore **lack conciseness** and as such do not meet the requirements of **Article 6 PCT**.
- 5.6 Claims 1-3 are not in the **two-part form** in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 5.7 To meet the requirements of Rule 5.1(a)(ii) PCT, **documents D1 and D2**, which represent a relevant state of the art with regard to the present invention, **should have been identified** in the opening part of the description and the relevant background art disclosed therein should have been briefly discussed.